

WHAT IS CLAIMED IS:

1. A magnetic bearing assembly adapted to be used with a motor of a heat-dissipating device, comprising:
  - a magnetic portion connected to a shaft and a base of said
  - 5 heat-dissipating device for simultaneously generating axially and radially magnetic forces to position the shaft; and
  - a bearing portion connected to said shaft and said base for supporting said shaft upon rotation of said shaft.
2. The magnetic bearing assembly according to Claim 1, wherein said
- 10 axially and radially magnetic forces are repulsive magnetic forces or attractive magnetic forces, respectively.
3. The magnetic bearing assembly according to Claim 1, wherein said magnetic portion includes an upper magnetic portion and a lower magnetic portion.
- 15 4. The magnetic bearing assembly according to Claim 3, wherein said upper magnetic portion and said lower magnetic portion are disposed symmetrically on two opposite sides of said bearing portion and include a first magnetic ring, a second magnetic ring and a third magnetic ring, respectively.
- 20 5. The magnetic bearing assembly according to Claim 4, wherein said first magnetic ring and said third magnetic ring are connected to said shaft and said second magnetic ring is connected to said base.
6. The magnetic bearing assembly according to Claim 4, wherein said second magnetic ring and said third magnetic ring are disposed in a
- 25 radial alignment with each other to have the same polar disposition.
7. The magnetic bearing assembly according to Claim 4, wherein said first magnetic ring and said second magnetic ring are disposed in an

axial alignment with each other to have an opposite polar disposition.

8. The magnetic bearing assembly according to Claim 3, wherein said upper magnetic portion includes an inner magnetic ring and an outer magnetic ring and said lower magnetic portion includes a first magnetic  
5 ring, a second magnetic ring and a third magnetic ring.

9. The magnetic bearing assembly according to Claim 8, wherein said inner magnetic ring and said outer magnetic ring are disposed in a radial alignment with each other to have the same polar disposition.

10. The magnetic bearing assembly according to Claim 8, wherein said  
10 inner magnetic ring and said outer magnetic ring are disposed in a radial alignment with each other to have an opposite polar disposition.

11. The magnetic bearing assembly according to Claim 8, wherein said first magnetic ring and said third magnetic ring are connected to the shaft and said second magnetic ring is connected to said base.

15 12. The magnetic bearing assembly according to Claim 8, wherein said first magnetic ring, said second magnetic ring and said third magnetic ring are disposed in an axial alignment with each other to have an opposite polar disposition for generating axially repulsive magnetic forces.

20 13. The magnetic bearing assembly according to Claim 8, wherein said first magnetic ring, said second magnetic ring and said third magnetic ring are disposed in an axial alignment with each other to have an identical polar disposition for generating axially attractive magnetic forces.

25 14. The magnetic bearing assembly according to Claim 1, wherein said bearing portion is a sleeve bearing.

15. A magnetic bearing assembly adapted to be used in a motor,

comprising:

a magnetic portion connected to a shaft and a base of said motor for simultaneously generating a radially magnetic force and an axially magnetic force, wherein said magnetic portion includes a first magnetic  
5 portion and a second magnetic portion which are disposed symmetrically in opposite orientations for respectively simultaneously providing said radially and axially magnetic forces; and

a bearing portion connected to said shaft and said base for supporting said shaft upon rotation of said shaft.

10 16. The magnetic bearing assembly according to Claim 15, wherein said axially and radially magnetic forces are repulsive magnetic forces or attractive magnetic forces, respectively.

17. The magnetic bearing assembly according to Claim 15, wherein said first magnetic portion and said second magnetic portion are disposed  
15 symmetrically on two opposite sides of said bearing portion and include a first magnetic ring, a second magnetic ring and a third magnetic ring, respectively.

18. The magnetic bearing assembly according to Claim 17, wherein said first magnetic ring and said third magnetic ring are connected to said  
20 shaft and said second magnetic ring is connected to said base.

19. A magnetic bearing assembly adapted to be used in a motor, comprising:

a magnetic portion connected to a shaft and a base of said motor for generating a radially magnetic force and an axially magnetic force,  
25 wherein said magnetic portion includes a first magnetic portion for providing said radially magnetic force and a second magnetic portion for providing said axially magnetic force; and

a bearing portion connected to said shaft and said base for supporting said shaft upon rotation of said shaft.

20. The magnetic bearing assembly according to Claim 19, wherein said first magnetic portion includes an inner magnetic ring and an outer magnetic ring and said second magnetic portion includes a first magnetic ring, a second magnetic ring and a third magnetic ring.

21. The magnetic bearing assembly according to Claim 20, wherein said first magnetic ring and said third magnetic ring are connected to the shaft and said second magnetic ring is connected to said base.

22. The magnetic bearing assembly according to Claim 20, wherein said inner magnetic ring and said outer magnetic ring are disposed in a radial alignment with each other to have the same polar disposition.

23. The magnetic bearing assembly according to Claim 20, wherein said first magnetic ring, said second magnetic ring and said third magnetic ring are disposed in an axial alignment with each other to have an opposite polar disposition.